

showy flowers. Though it can hardly be considered a botanical variety, it seems advisable to give it a distinct name.

RHODODENDRON MINUS f. **Harbisonii**, forma nova.

A type differt floribus majoribus, 3.3-4 cm. longis in racemis circiter 10-floris, sepalis inaequalibus majoribus ovatis longe ciliatis.

GEORGIA: Banks Co., May 18, 1911, *T. G. Harbison* (Nos. 615, 616 in Herb. Arnold Arboretum).

This differs from the typical form which has the flowers 2.5-3 cm. long and the racemes generally 7-8-flowered, in the larger flowers and larger racemes; also the leaves are somewhat larger, attaining 11 cm. in length. In its large flowers and denser flower-clusters it resembles *R. Chapmanii* Gray, but that species has smaller obtuse or acute, not acuminate leaves very densely lepidote beneath and revolute at the margin.

ARNOLD ARBORETUM.

THE FORMS OF PELTANDRA VIRGINICA.

SIDNEY F. BLAKE.

Plate 94.

IN 1836 Rafinesque, in the *New Flora of North America*, part 1, pp. 85-89, elaborated his previous treatment of the genus *Peltandra* into a monograph in which eight species were described, founded principally on differences in leaf outline,¹ although the number of seeds and some supposed diagnostic characters from petiole, scape, and spathe were also employed. Of Rafinesque's species two were recently taken up as varieties by Mr. Ivar Tidestrom,² on the basis of field study of the plants in Maryland and Virginia. My collection last fall of one or two forms obviously distinct from any of these has led to a study of Rafinesque's monograph in connection with the material in the Gray Herbarium, the herbaria of the New England Botanical Club and the Boston Society of Natural History, and a

¹ Except *P. alba* Raf. (= *P. sagittifolia* (Mx.) Raf.), type of the subgenus *Leucospatha* Raf.

² RHODORA 12:47-50, pl. 83 (March, 1910).

small amount in my own herbarium, in which it has been possible to distinguish seven forms, differing from each other apparently in leaf characters only.

The forms, in their range of variation strongly suggestive of those of *Sagittaria latifolia*, fall naturally into three groups: one group of three forms with broad leaves with short and broad basal lobes or ears, another of two forms having narrower, more acute leaves with longer, narrower ears, and a third composed of two forms with lanceolate acuminate leaves having very short unequal ears or none at all. The two plants treated of by Tidestrom as var. *heterophylla* (Raf.) Tidestrom and var. *angustifolia* (Raf.) Tidestrom make up this last and most aberrant group, with lance-oblong or narrowly lanceolate, acuminate leaves tapering or rounded or very shortly and equally eared at base. These two plants, Rafinesque's *P. heterophylla*¹ and *P. angustifolia*, although very close to one another and undoubtedly intergrading, may perhaps be maintained as distinct formae.

From *Peltandra heterophylla* a few apparently transitional specimens lead to the second pair of formae, possessing distinct but narrow basal lobes, and differing among themselves in size of leaf and development of the ears. One of these, a form with pointed generally narrow leaves and elongated usually divergent basal lobes often twice as long as the breadth of leaf, may possibly be the same as *P. hastata* Raf., with "leaves equal in length oblong, hastate cordate acuminate, lobes subacute"; the probability of this has not however seemed to me sufficient to justify the adoption of the name. Rafinesque remarks that his plant has several seeds, hence, "is a *Leucospatha* like the next," which is *P. alba* Raf. (now called *P. sagittifolia* (Mx.) Raf.), the type of the well distinguished subgenus *Leucospatha* Raf., and a plant to whose normal leaves the description just quoted well applies. *Arum virginicum* as understood by Elliott, considered by Rafinesque identical with his *P. hastata*, is not by Elliott's description to be distinguished from plants of the ordinary form with hastate basal lobes.

The third group, comprising two forms beside the type of the species, is distinguished from the last by its broad leaves with distinct but short and broad ears. The most extreme of these, a form with very broad leaves nearly equilaterally triangular, and with obtuse or often subacute basal lobes, seems to be identical with Rafinesque's *P.*

¹ This orthography was apparently always employed by Rafinesque in the numerous cases where this name was applied to new "species" in the "New Flora."

latifolia with "leaves broad triangular sagittate, . . . often one foot long and broad." Of the two forms with more elliptical leaf outline, one, represented by a single sheet from Delaware collected by Commons, has broad leaves with a rounded tip and broadly rounded ears nearly or quite closing the sinus. The other form, which, following Tidestrom, is here taken as the type of the species, has a narrower more acute leaf with narrower deltoid ears.

The absence of a distinct geographical range, or even of a difference in habitat,¹ in the case of any of the forms, coupled with the fact that the differences are purely foliar and that intergrades are frequent, has led me to rank these plants as formae rather than varieties.

In the following synopsis I have arranged the forms after what seem to be their natural affiliations.

* Leaves broad (3)7–17.5 cm. wide), with distinct basal lobes 2–13 cm. long.

+ Leaves with blade² (10)14–22 cm. long, 8–17.5 cm. wide; basal lobes broad (3–7.5 cm. wide), short, nearly always less than width of blade, deltoid to deltoid-lanceolate, or rounded.

++ Leaves very broad, almost equilaterally triangular, 18.5–28 cm. across the tips of the ears, these obtuse or subacute, $\frac{3}{4}$ as long as main blade; sinus open.

1. PELTANDRA VIRGINICA (L.) Kunth f. **latifolia** (Raf.) n. comb. *P. latifolia* Raf. l. c. 87. "South New Jersey and Delaware," Rafinesque. Specimens examined: MASSACHUSETTS: North Cambridge, July 15, 1890 (*Sereno Watson*). DELAWARE: Wilmington, June 2, 1890 (*A. Commons*).

++ ++ Leaves elliptical or elliptical-oblong, not equilateral (11–20 cm. between tips of the ears).

= Leaves broad and rounded (blade 16–19.5 cm. long, 16.5–17.5 cm. wide); basal lobes broadly rounded, scarcely or not projecting at sides of leaf, $\frac{1}{2}$ as long as the blade; sinus nearly or quite closed.

2. P. VIRGINICA f. **rotundata**, n. forma.³ TYPE SHEET (in Gray Herb.): DELAWARE: Wilmington, June 2, 1890 (*A. Commons*).

= = Leaves more oblong (blade (10)14–22 cm. long, 8–17 wide); basal lobes obtuse, usually narrowed toward the tip, $\frac{1}{4}$ – $\frac{1}{2}$ the length of blade, usually somewhat diverging; sinus open.

3. P. VIRGINICA (typical form). *P. undulata* Raf., *P. canadensis* Raf., l. c. 87. Typical specimens examined: MAINE: Livermore

¹ Mr. Tidestrom found var. *angustifolia* growing with the type at Nanjemoy Creek, Maryland; Dr. B. L. Robinson collected two forms under his number 161 at East Jaffrey, New Hampshire; and I found three forms growing in a Sphagnum bog in Canton, two about a pond in West Stoughton, and two in a ditch in woods in Norwood, Massachusetts.

² Blade is measured from top of petiole to tip of leaf.

³ P. VIRGINICA f. **rotundata**, n. forma, foliis rotundatis, lamina (vide supra) 16–19.5 cm. longa, 16.5–17.5 cm. lata; lobis basilariis late rotundatis, vix aut omnino non divergentibus, dimidio longis lamina; sinu prope vel ex toto clauso.

Falls, 1878 (*Miss Furbish*); Brunswick, 1882 (*Miss Furbish*); Spruce Pond, Cornish, July, 1900 (*A. H. Norton*). NEW HAMPSHIRE: E. Jaffrey, 8 July, 1897 (*B. L. Robinson* 161 part). MASSACHUSETTS: Beaver Brook Reservation, May 26, 1894 (*W. H. Manning*); Stony Brook Reservation, June 17, 1895 (*G. L. Chandler*); damp ground near pond, West Stoughton, 23 Sept., 1911 (*Blake* 3378); Sphagnum bog, Canton, 13 Sept., 1911 (*Blake* 3325); ditch in woods, Norwood, 12 Oct., 1911 (*Blake* 3440). DELAWARE: Wilmington, June 2, 1890 (*A. Commons*). MARYLAND: Marshall Hall, July 23, 1890 (*J. N. Rose*) and June 23, 1905 (*Ivar Tidestrom*); swamp along Potomac River, near Chainbridge, above Washington, July, 1904 (*Ivar Tidestrom*). DISTRICT OF COLUMBIA: Washington, river swamp, May 29, 1896 (*E. S. Steele*). FLORIDA: Miami River, Feb. 5, 1892 (*J. H. Simpson*); swamps in water, vicinity of Eustis, Lake Co., April 15–30, 1894 (*G. V. Nash* 453).

+ + Leaves comparatively narrow, 6–12 cm. broad, acute to acuminate; basal lobes longer (mostly one to two times the breadth of blade), narrow (1–3.5 cm. broad near the middle), mostly lanceolate or linear lanceolate in outline.

+ + Leaves larger and broader (main blade 10.5–23.5 cm. long, 6–12 cm. broad; basal lobes longer, (5)7–13 cm. long, often twice the breadth of leaf, widely divaricate.

4. *P. VIRGINICA* f. **hastifolia**, n. forma.¹ ?*P. hastata* Raf. TYPE SHEET No. 4530, my herb.; damp ground near pond, West Stoughton, Massachusetts, 23 Sept., 1911, *Blake* 3377; PARATYPE, No. 4531, same data, in Gray Herb. Other specimens examined: MAINE: Spruce Pond, Cornish, July, 1890 (*A. H. Norton*). MASSACHUSETTS: Malden, July 2, 1890 (*L. L. Dame*), and July 2, 1876 (*H. L. Moody*); ditch in woods, Norwood, 12 Oct., 1911 (*Blake* 3441). CONNECTICUT: rare, in pond, Southington, July 12, 1899 (*L. Andrews* 820); ponds, Southington, July 12 and Aug. 18, 1899 (*Bissell* 881). MICHIGAN: (no other data).

+ + Leaves smaller and narrower (main blade 10.5–20 cm. long, 3–5.5 cm. wide near middle); basal lobes shorter (2–7 cm. long), the lobes only rarely divergent.

5. *P. VIRGINICA* f. **brachyota**, n. forma.² TYPE SHEET (in Gray Herb.): NEW HAMPSHIRE: Contoocook River, East Jaffrey, 6 Aug., 1898 (*W. Deane and B. L. Robinson* 574). Other specimens examined: NEW HAMPSHIRE: abundant in shallow water of river; East Jaffrey, 8 July, 1897 (*B. L. Robinson* 161 part). MASSACHUSETTS: Lynnfield, June 17, 1879 (*H. A. Young*); wet meadow around Doleful Pond, Stoneham, July 9, 1896 (*W. P. Rich*); sphagnum bog, Canton, 13

¹ *P. VIRGINICA* f. **hastifolia**, n. forma, foliis acutis vel acuminatis, lamina 10.5–23.5 cm. longa, 6–12 cm. lata, lobis basilariis angustis, (5)7–13 cm. longis, latitudine laminae saepe duplo longioribus, late divaricatis.

² *P. VIRGINICA* f. **brachyota**, n. forma, foliis minoribus, angustioribus, lamina 10.5–20 cm. longa, 3–5.5 cm. lata, auribus brevioribus, 2–7 cm. longis, raro divaricatis.

Sept., 1911 (*Blake* 3328); shallow water, Centerville, July 3, 1900 (*Mrs. C. I. Cheney*); Stockbridge, Aug. 20, 1902 (*R. Hoffman*). DELAWARE: Wilmington, June 1890 (*A. Commons*).

* * Leaves narrow (2.5–5 cm. wide), generally acuminate, with rounded, oblique or cordate base, the ears when present very short (1–2 cm. long) and unequal.

+ Leaves oblong or lance-oblong, acute or acuminate, 15.5–19 cm. long, 4.5–5 cm. broad; base oblique, rounded, or unequally and shortly eared.

6. *P. VIRGINICA* f. **heterophylla** (Raf.) n. comb.¹ *P. heterophylla* Raf. l. c. 88. *P. virginica* var. *heterophylla* Tidestrom, l. c. 49. According to Rafinesque, southern New Jersey and Delaware, also "even near Philadelphia in the Schuykill." Specimens examined: MASSACHUSETTS: sphagnum bog, Canton, 13 Sept. 1911 (*Blake* 3329 [leaves small, only 6.5–9 cm. long — perhaps not really this form]). MARYLAND: rare, Marshall Hall, June 22, 1905 (*Ivar Tidestrom*).

+ + Leaves very narrowly lanceolate, long acuminate, 23.5–28 cm. long, 2.5–3.5 cm. wide; base oblique or rounded.

7. *P. VIRGINICA* f. **angustifolia** (Raf.) n. comb. *P. angustifolia* Raf. l. c. 89. *P. virginica* var. *angustifolia* Tidestrom, l. c. 50. "Virginia &c.," Rafinesque. Specimens examined: MARYLAND: rare, Nanjemoy Creek, June 1906 (*Ivar Tidestrom*).

STOUGHTON, MASSACHUSETTS.

EXPLANATION OF PLATE 94.

Fig. 1. *Peltandra virginica* f. *latifolia* (Delaware, *Commons*. Not an extreme of the form).

Fig. 2. *P. virginica* f. *rotundata* (leaf from type sheet).

Fig. 3. *P. virginica* f. *hastifolia* (Michigan).

Fig. 4. *P. virginica* f. *brachyota* (leaf from type sheet).

(The three other forms were well figured by Mrs. Chase in RHODORA for March, 1910.)

¹ It may be well to mention that the youngest leaves of the seedling (as shown by sheets collected by Walter Deane on shore of "Glacialis," Cambridge, Massachusetts, May 20, 1894) are of this type, suggesting that it represents the primitive leaf-form in the species.